Social Indicators Research (2024) 173:803–826
https://doi.org/10.1007/s11205-024-03373-0

ORIGINAL RESEARCH

How Selective Mobility, Social and Ecological Influence may Impact Geographic Variations in Life Satisfaction Scores: An Australian Longitudinal Study

Phil Lignier[1] · **Diane Jarvis**[1] · **Daniel Grainger**[1] · **Taha Chaiechi**[1]

Accepted: 8 June 2024 / Published online: 21 June 2024

Abstract
The spatial clustering of life satisfaction scores noted in recent empirical research suggests that 'happier' people may live in specific neighbourhoods or regions. This prompts the questions: Do 'happier' people choose to move to specific places? Does living in specific places make people 'happier'? To answer these questions, this paper explores possible occurrences of selective mobility, and social and ecological influence. Using panel data collected in Australia from 2013 to 2021, we examine the association between life satisfaction scores and selective geographic mobility, and the possible influence that living at specific locations may have on individual life satisfaction trajectory, while controlling for individual personality traits and socio-demographic factors. Our results indicate that urban residents reporting lower life satisfaction scores before the move have a higher probability of moving to a rural area. Similarly, lower life satisfaction scores are associated with a higher probability of moving to a region with a different climate. We also find evidence that moving from the city to the country is associated with an uplift of the life satisfaction trajectory for the individual. A similar conclusion is reached for people who moved to a warmer climate, but *not* for a move to a cooler climate. To our knowledge, this is the first time the concepts of selective mobility and social and ecological influence have been applied in life satisfaction research. Our work provides an indicator that can be important to demographers predicting population movements. It can also inform policy development around assisting regional and rural areas attract/ retain residents to support regional sustainability.

Keywords Life satisfaction · Internal migration · Personality traits · Climate · Geographical psychology

✉ Phil Lignier
phil.lignier@jcu.edu.au

[1] College of Business, Law & Governance, James Cook University, Cairns, Australia

1 Introduction

Spatial clustering of life satisfaction (LS)[1] self-rated scores has been documented in several recent intra-country studies (Helliwell et al. 2019; Jokela et al. 2015; Kubiszewski et al. 2019; Oswald & Wu, 2011); however little research has been devoted so far to investigating the possible reasons why this is happening. Research examining spatial variations in psychological traits has posited that three of the mechanisms explaining spatial clustering are selective residential mobility, social influence and ecological influence (Rentfrow & Jokela, 2016). In this paper, we are exploring whether wellbeing and personality traits together can act as an indicator of mobility, informing policy development around attracting/retaining residents into the future to promote sustainability of rural and urban locations in different climates.

Selective residential mobility refers to the process by which people with different personality traits, different motivations and different levels of wellbeing will move to different areas (Rentfrow & Jokela, 2016); more specifically it assumes that people move to places that they perceive as reinforcing their psychological needs (Jokela, 2009, 2014). *Social influence* refers to the effects that living among people within a given local environment has on a person's thoughts, actions and behaviour (Bond et al. 2012; Cohen, 1996). It is based on the assumption that traditions, customs and lifestyle typical of a geographical area affect social norms and therefore impacts individual attitudes and behaviours (Hofstede, 2001; Hofstede & McCrae, 2004). *Ecological influence* originally refers to how epidemiological history of a region affects psychological processes and wellbeing (Schaller & Murray, 2008). The concept has been extended to the influence of features of the natural and built environment such as climate, terrain, and greenspace (Van de Vliert, 2013).

The effects of social and ecological influence on personality traits have been examined by several authors (for instance Jokela (2020); the influence of the social and ecological environment on wellbeing has also been investigated to some extent, in particular the impact of rural compared to urban residence on LS and hedonic wellbeing (Gilbert et al. 2016; Weckroth et al. 2022); however the effect of residing in a specific type of climate on both wellbeing and personality has barely been considered. The association between personality traits and selective mobility has received some attention (Campbell, 2019; Jokela, 2020; Jokela et al. 2008). While the relationship between happiness/ wellbeing and migration has been examined, the focus has mostly been on international migration (Hendriks & Bartram, 2018; Polgreen & Simpson, 2011); the association between LS and internal migration, particularly in advanced economies has received more limited attention.

Using longitudinal data, this paper explores how spatial clustering in LS scores could develop due to selective mobility, social and ecological influence while controlling for personality traits and individual socio-demographic characteristics. In the first step of this investigation, we examine the association between LS and two specific types of selective geographic mobility: moving from the city to a rural area (and vice versa) and mobility to a region with a different climate. The second step considers the possible social and ecological

[1] Life satisfaction (LS) is commonly used in wellbeing studies, and is identified as the cognitive component representing the broader concept of subjective wellbeing (SWB) (Cummins, 2018). SWB refers to how individuals evaluate their lives (Diener et al. 2018). The multiple dimensions of SWB, *hedonic* and *eudaimonic* have been identified and discussed in the literature (Deci & Ryan, 2008; Helliwell, 2003; OECD, 2013).

influence of the type of residence (rural/urban and climate zone) on the within-individual LS trajectory over time.

We derive several research questions that reflect each step described above. Step one: How does LS score prior to the move impact on a decision to move from urban to rural? from the rural to urban? *(RQ_1)* How does LS score prior to the move impact on a decision to move to a region with a different climate? *(RQ_2)* Step two: How does moving to a different type of residence (urban/ rural) affect within-individual LS trajectory over time? *(RQ_3)* How does moving to a different climate zone affect within-individual LS trajectory over time? *(RQ_4)*.

The remainder of this paper is organised as follows. In Sect. 2, we briefly review the relevant literature and in Sect. 3 we describe the data and methodology; our results are presented in Sect. 4 and discussed in Sect. 5. In Sect. 6, we summarise our findings, and explain how our research can help improve wellbeing by informing policy.

2 Literature Review

2.1 Spatial Variations and Geographical Clustering

Geographical psychology is a discipline that analyses the spatial distribution of psychological phenomena and their relationship with contextual features of the macro-environment (Rentfrow & Jokela, 2016). Geographical psychology has been applied to study the variations in personality, wellbeing, religiosity and other psychological characteristics across nations (Inglehardt & Klingemann, 2000; Lynn & Steel, 2006), across regions within the same country (Rentfrow et al. 2009, 2013, 2015) and within a large metropolitan area (Jokela et al. 2015).

There is some evidence of spatial heterogeneity and clustering in LS levels in Australia with the average score per Level 2 statistical area (SA2)[2] varying from around 3 to almost 10 on a 0 to 10 scale, however no discernible geographic pattern emerges (Kubiszewski et al. 2019; Lignier et al. 2023). A similar finding is reported by researchers in Canada where the difference in mean LS between the bottom and top quintile was found to be significant[3] (Helliwell et al. 2019). In research conducted in the US, Oswald and Wu (2011) note that the differences in wellbeing across states in the US correspond up to 0.2 satisfaction point similar in size to the effect of unemployment or divorce.

2.2 Residential Mobility, Life Satisfaction and Personality Traits

Neo-classical economists traditionally view migration as an investment where the returns will be in the form of maximisation of the migrants' utility function (Sjaastad, 1962; Tiebout, 1956). This paradigm relies on a number of assumptions such as availability of information about the destination location and rationality of the moving decision, that have been chal-

[2] Level 2 statistical areas, the second smallest structure in the Australian Statistical Geographic System, are centred around functional areas of cities and towns and have a population between 3,000 and 25,000 (Australian Bureau of Statistics, 2016).

[3] When normalised to the average standard deviation, the mean for the bottom and the top quintile deviated from the overall mean by a value of -1.5 and +1.5 respectively (see Helliwell et al. 2019, Fig. 5, p 13).

lenged by both empirical evidence (Massey et al. 1993; Schkade & Kahneman, 1998) and theory (Lee, 1966). It seems that most people migrate for a variety of reasons, but they expect that this will result in an increased wellbeing and quality of life (Graham & Nikolova, 2015). The analysis is further complicated by the fact that moving generally involves a family unit (Mincer, 1978) and the move may not be beneficial for every members of the family (Castorina & Welters, 2022). It is also important to bear in mind the possibility of reverse causation between migration and happiness: are happier people more inclined to migrate or does migration cause an increase in happiness? (Bartram, 2011).

Evidence from international migration research indicates that dis-satisfaction with one's life predicts migration to a neighbouring country (Silventoinen et al. 2007). Correspondingly a study of internal migration within the UK reveals that people who migrate become happier after the move than they were before, but also that people who migrate are overall less happy than those who don't (Nowok et al. 2013). The results from that study show that migration generally takes place after a period of stress: happiness peaks just after the move, but in the long term it seems to stabilise to the pre-stress level (Nowok et al. 2013). A similar study on inter-state migration in the US finds that a state with higher wellbeing levels among its residents will attract migrants from other states (Hummel, 2016).

Other research has shown that personality traits and personal background can impact the relationship between wellbeing and migration. People who have moved frequently during their childhood tend to have lower level of LS; however the association is moderated by extraversion: strongly negative for introverts, almost absent for extraverts (Oishi & Tsang, 2022). At an individual level, high residential mobility is generally correlated with lower levels of wellbeing (Oishi & Schimmack, 2010) but at city level, residential mobility is associated with higher levels of wellbeing: i.e., people currently living in cities with high levels of residential mobility report higher levels of LS *on average* than those living in cities where residents are more stable (Oishi et al. 2015).

2.3 Selective Geographic Mobility

The assumption underlying the concept of selective mobility is that people will choose their place of residence based on where their needs are best satisfied (Rentfrow & Jokela, 2016). This may be based on job opportunities, goods and services provided (Sjaastad, 1962; Tiebout, 1956) but also on whether they derive satisfaction from the community (Florida, 2009) and emotional attachment (Florida & Mellander, 2010). Findings from the US suggest that people may also choose to migrate to places where the weather is "nice" (Rappaport, 2007).

There is scant evidence about the relationship between happiness levels and particular types of geographic mobility. Research in the UK show that migrants who moved a distance of 25–50 km reported the largest increase in happiness after the move, but long distance migrants seemed happier overall than short distance movers despite the fact a long distance move meant that community and family connections were likely to be disrupted by such a move (Nowok et al. 2013). However, little is known about the association between pre-move happiness levels and specific types of mobility, for instance from a rural area to an urban area or vice versa. There is some evidence that people with certain personality traits, a factor with a strong correlation with happiness levels (Tellegen et al. 1988), tend to move to certain places rather than others.

Research undertaken in Finland found that individuals with high sociability were more likely to leave a rural area or to stay in an urban area (Jokela et al. 2008). Adaptability and cognitive ability were also associated with a higher probability of migration from rural to urban areas in Norway (Butikofer & Peri, 2017). Jokela (2020) found that among Australian rural residents, extraversion, conscientiousness, and openness to experience were positive predictors of moving to an urban area.

2.4 Social and Ecological Influence on Wellbeing and Personality Traits

An analysis of the spatial distribution of personality traits and LS across postal districts in Metropolitan London shows evidence of clustering of high and low values for the five personality traits and LS scores demonstrating that both types of indicators displayed spatial autocorrelation (Jokela et al. 2015). Likewise, analysis of LS scores for adjoining census districts in Canada indicated the possibility of spillover effects between neighbouring areas: LS mean at area level for one community can be a predictor of LS at area level for adjoining communities (Ziogas et al. 2023).

The positive influence on wellbeing of living near greenspace is well documented in the empirical literature (White et al. 2013), but there is still much debate as to whether living in a rural area makes a difference. Earlier research conducted in the US indicated that rural residents might be happier (Fernandez & Kulik, 1981), however this was not confirmed in later European studies (Shucksmith et al. 2009). According to Gilbert et al. (2016), residents living in remote rural areas in Scotland had higher level of LS but there was no difference between urban residents and residents living in inner rural areas. In Australia, Cummins et al. (2003) reported that people living in rural areas were more satisfied with their personal lives. Similarly, a recent Canadian study shows that average LS scores for rural census districts were significantly higher than for urban districts (Helliwell et al. 2019; Ziogas et al. 2023). Research investigating regional variations in personality show evidence that regions with higher level of agreeableness in both Great Britain and in the US are generally rural regions, while regions with high openness to experience are generally urban and densely populated (Rentfrow et al. 2013, 2015).

While climate variables such as temperature and sunshine have been shown to have an impact on average LS scores (Brereton et al. 2008; Lignier et al. 2023; Maddison & Rehdanz, 2011), no clear differences in average LS between climate zones emerge. However findings from a recent Australian study indicate that climates with hot and dry attributes have a negative impact on LS, while the influence of milder conditions typical of a warm temperate climate is positive (Lignier et al. 2023). There is also some evidence that natural conditions may have an influence on behaviour and personality traits. Van de Vliert (2013) notes that residents of regions with harsh climate conditions and limited natural resources display more collectivistic and communal values compared to regions with a more favourable natural environment. An investigation of regional variations in personality traits in the US and Great Britain reveals that neuroticism is low in warmer regions (Rentfrow et al. 2013, 2015).

In summary the empirical literature provides clear evidence of spatial clustering for both LS scores and personality traits; however, the evidence about a possible association between LS scores and certain types of geographic mobility remains limited. Likewise, we know very little about the influence of living in specific types of locations on LS over time. This

may restrict development of policies to support improved LS and to support sustainability of different types of communities that need to attract/retain people to live and work in those locations.

3 Methodology

3.1 Database

This project analyses data collected by the Household Income and Labour Dynamics in Australia survey (HILDA) over the period 2013–2021. The HILDA survey asks individual respondents to rate their overall LS on a yearly basis and periodically collects data about personality traits (2013, 2017 and 2021 in our sample). Years when data about personality traits are available are considered baseline years in our study. The annual HILDA data files containing all relevant variables were appended into a single panel dataset. To retain as much data as possible while working with balanced datasets, the appended dataset was split into separate sub-sets for the baseline periods 2013–2016 and 2017–2021. Respondents who did not have observations for all years of either baseline periods were discarded as were respondents where the data about personality traits was missing. The final structure of the panel data set was as follows: a total of 15,507 respondents, corresponding to 120,188 observations; out of this total, 9,813 respondents (63.28%) had data for the full 9-year period, the rest of the dataset was balanced over each baseline period.

3.2 Variables

Key variables used in this project relate to residential mobility, life satisfaction, personality traits, socio-demographic characteristics, and type of residence. Each category is now described in detail.

3.2.1 Residential Mobility Variables

Individual residential mobility is captured by each wave of the HILDA survey through the question "did you move in the previous 12 months?" While mobility itself is recorded as an event, *selective* mobility is determined based on transition data: the change in residence of the respondent between two consecutive waves. A move from the city to a rural area or vice versa was identified when the respondent's residence changed from a residence classified as 'urban' to an area classified as 'rural'[4]. Selective mobility between climate zones was identified when the change of residence was to an area classified under a different climate zone[5]. Distinction was made between moving to a warmer climate and moving to a cooler climate.

Extensive research reported in the migration literature show that the decision unit in regard to a move is the household rather than the individual (Castorina & Welters, 2022; Mincer, 1978). The HILDA dataset is structured around households, this means that even though the unit of observation in our dataset is the individual, moves will involve all mem-

[4] See Sect. 3.2.5 below about rural vs. urban residence.

[5] The criteria used to identify different climate zones are described in Sect. 3.2.6.

bers of the same household. There is also evidence that job-related moves are different as they will typically involve an individual who is a lead mover (the person who decides the move) and a tied mover (Castorina & Welters, 2022) with possible different happiness outcomes between the two (Nowok et al. 2013).

3.2.2 Life Satisfaction

Individual LS is captured each year by the HILDA survey using the question "How satisfied are you with your life overall?"; it is scored on a 0 to 10 scale (0 totally dissatisfied 10 totally dissatisfied). Existing evidence on internal migration suggests that there is often a period of stress before migration, and typically a lag of two to three years between the low point of happiness/LS and the time of migration (Nowok et al. 2013).

3.2.3 Personality Traits

Personality traits were assessed by the survey using the Saucier & Goldberg Big Five Marker scale with 8 items for extraversion, 7 items for agreeableness, 7 items for emotional stability, 7 items for conscientiousness and 6 items for openness to experience (Costa & McCrae, 1992; Saucier, 1994). All items were assessed on a 1 to 7 scale with 1 for "doesn't describe me at all" to 7 "describes me very well" (Melbourne Institute, 2022). Personality scores were standardised for each year of assessment using the mean and standard deviation.

3.2.4 Socio-Demographic Variables

The inclusion of socio-demographic variables believed to influence residential mobility was guided by previous internal migration studies (Castorina & Welters, 2022; Jokela, 2020; Nowok et al. 2013). The specific variables were age (squared), sex (female), level of education (measured on a 4-point scale), employment status (binary), household income, marital status (binary), having children (binary).

Two additional variables indicated whether the individual had experienced important life events in the year before they moved. The inclusion of these variables is justified by the evidence that important life events often precedes the decision to move (Castorina & Welters, 2022; Nowok et al. 2013). Life events were classified as either favourable or adverse; the incidence of either type of event in the previous year being identified by a dummy variable. Favourable life events include getting married, having a baby, work promotion, retirement, and improvement of personal finance. Adverse events include death of a spouse or relative, jail, domestic violence, and illness.

3.2.5 Rural vs. Urban Residence

The definition of rurality is a contentious issue (Brereton et al. 2011) and various criteria for the rural/ urban dichotomy have been used in the wellbeing literature. Fernandez and Kulik (1981) relied on self-description by respondents and classified as rural any location that was neither a city, a suburb nor a town, while Gilbert et al. (2016) used the Scottish government classification that determines that any centre with a population under 3,000 is rural, and areas located more than a 30 min drive from a population centre of more than 10,000

is 'remote rural'. In this study, the rural/ urban classification is based on the Australian Bureau of Statistics accessibility/ remoteness index of the Level 1 statistical area (SA1) of residence (Australian Bureau of Statistics, 2023b). The 'main cities of Australia' category, defined as urban centres with a population over 250,000, is identified as 'urban' while all other remoteness categories are identified as 'rural'.[6] The high population threshold for the 'urban' category reflects the particular demographic structure in Australia where 72% of the population lives in major cities (Australian Bureau of Statistics, 2022b).[7]

3.2.6 Climate Zones

Definitions of climate zones were based on the Australian climate zone classification published by the Bureau of Meteorology (2006), but with an emphasis on temperature. Thresholds were selected based on existing evidence about thermal comfort and outdoor activities (Chen & Ng, 2012): 20°C for 'cool/ temperate', 25°C for ' temperate/warm', 30 °C for ' warm /hot'. Allocation to a specific climate zone was based on the SA2 of residence at the time of survey. Four of the five largest metropolitan areas are in the temperate zone, the fifth one (Brisbane) in the warm zone. For the social and ecological influence step of our analysis, the cool and temperate zones were merged into a single zone while the few observations in the hot zone were absorbed into the warm zone.

3.3 Method of Analysis

Given the longitudinal structure of the dataset, panel data analysis was adopted as a tool of investigation. Panel data logistic regression was used for selective mobility given the categorical nature of the dependent variable. Linear regression was used for the social and ecological influence analysis as the LS dependent variable is assumed to be of a cardinal nature (Kristoffersen, 2010).

3.3.1 Selective Mobility Analysis

This step addresses the following research questions:

RQ_1: How does LS score prior to the move impact on a decision to move from urban to rural? from rural to urban?.

RQ_2: How does LS score prior to the move impact on a decision to move to a region with a different climate?

For each of these questions, we estimate *three* successive models. The first model only includes the LS score *lagged one year* adjusted by sex and age as the independent variables[8].

[6] The 2016 remoteness classification for each SA1 used for this study is available from the ABS website: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.005July%202016?OpenDocument.

[7] For comparison, Helliwell et al. (2019) use a 50,000-population threshold for the 'urban' criteria in their Canadian study.

[8] We considered including a two-year lagged and three-year lagged values of LS in our models based on the findings by Nowok et al. (2013), however those variables were not found to be significant. Age and sex are

$$Y_{it} = \begin{cases} 1 if x_{i(t-1)}\beta_1 + a\prime_{it}\beta_2 + \epsilon_{it} > 0 \\ 0\, otherwise \end{cases} \quad (1)$$

where Y_{it} represents the value of the move variable for individual i in year t, $x_{i(t-1)}$ is the LS score of individual i lagged one year, $a\prime_{it}$ is a vector of socio-demographic variables representing age and sex, α_i is a time invariant error term for individual i, ϵ_{it} is the random error term for individual i in year t and net of the time invariant error α_i.

The second model expands (1) by adding the five (standardised) personality variables as independent variables.

$$Y_{it} = \begin{cases} 1\, if x_{i(t-1)}\beta_1 + a\prime_{it}\beta_2 + p'_{it}\beta_3 + \alpha_i + \epsilon_{it} > 0 \\ 0\, otherwise \end{cases} \quad (2)$$

where p'_{it} is a vector of variables representing personality traits for individual i in year t.

The third model expands (2) by adding the control variables (socio-demographic variables and life events).

$$Y_{it} = \begin{cases} 1\, if x_{i(t-1)}\beta_1 + p'_{it}\beta_2 + d'_{it}\beta_3 + \alpha_i + \epsilon_{it} > 0 \\ 0\, otherwise \end{cases} \quad (3)$$

Where d'_{it} is a vector of socio-demographic (including age and sex) and life event variables for individual i in year t.

The question arises about whether to use random effects or fixed effects estimator for the regression. Random effects (RE) estimator assumes that the random error term is not correlated to regressors, while fixed effects (FE) (within) estimator regresses the demeaned dependent variable on the demeaned independent variables, thereby eliminating the effect of the time invariant factors. Whilst FE is appropriate in certain circumstances, it is unsuitable here as this approach discards information that remains unchanged (fixed) across the study period. In this study it would mean discarding all respondents who did not move at all during the reference period. For this reason, we used RE models for the selective mobility analysis.

For the questions relating to selective mobility, we sub-divide the dataset to allow us to isolate the factors driving the behaviour of each specific sub-group. Thus, we consider only rural residents at the time of the baseline years for the selective mobility to the city, conversely we consider only urban residents at the time of the baseline year for the selective mobility to a rural area (RQ_1) ; we use the sub-dataset of people who resided in the temperate zones at baseline year for the selective mobility to a warmer climate; and the sub-dataset of people residing in the warm or hot zone at baseline year for the selective mobility to a cooler climate (RQ_2). The move can happen can any time during the period.

3.3.2 Social and Ecological Influence Analysis

This second step in our analysis addresses the following research questions:

also important moderators in the relationship between LS and selective mobility.

RQ$_3$: How does moving to a different type of residence (urban/ rural) affect within-individual LS trajectory over time?

RQ$_4$: How does moving to a different climate zone affect within- individual LS trajectory over time?

For social and ecological influence, yearly LS score is the dependent variable. All models are regressed using a FE (within) estimator as we are considering the influence of factors that change over time as in Jokela (2020). We estimate *three* successive models for each question: the first model incorporates residence type (urban/ rural or climate zone) as the independent variable:

$$\tilde{y_{it}} = \tilde{r_{it}}\,\beta_1 + \tilde{\epsilon_{it}} \tag{4}$$

with:

$$\tilde{y_{it}} = y_{it} - \bar{y_i} + \bar{y}; \tilde{r_{it}} = r_{it} - \bar{r_i} + \bar{r} \text{ and } \tilde{\epsilon_{it}} = \epsilon_{it} - \bar{\epsilon_i} + \bar{\epsilon}$$

where y_{it} is the LS score of individual i in year t, r_{it} is the type of residence of individual i in year t, ϵ_{it} is the time dependent random error term for individual i in year t.

The second model expands (4) by adding the five standardised personality traits:

$$\tilde{y_{it}} = \tilde{r_{it}}\,\beta_1 + \tilde{p'_{it}}\,\beta_2 + \tilde{\epsilon_{it}} \tag{5}$$

with:

$$\tilde{p'_{it}} = p'_{it} - \bar{p'_i} + \bar{p}'$$

where p'_{it} is a vector of variables representing personality traits for individual i in year t.

The third model expands (5) by adding control variables for health status, marriage status and income.

$$\tilde{y_{it}} = \tilde{r_{it}}\,\beta_1 + \tilde{p'_{it}}\,\beta_2 + \tilde{d'_{it}}\,\beta_3 + \tilde{\epsilon_{it}} \tag{6}$$

with:

$$\tilde{d'_{it}} = d'_{it} - \bar{d'_i} + \bar{d}'$$

4 Results

4.1 Descriptive Statistics

4.1.1 Residential Mobility

Out of the total 15,507 respondents, 5,158 were rural residents in the baseline year (2013 or 2017) and 10,349 were urban residents. About 50% of all respondents moved at least once during the whole period of study; the proportion is similar among rural and urban residents. 12.1% of rural residents moved to the city and 7.5% of urban residents move to a rural area (Fig. 1). Overall, 6.1% of respondents moved to a warmer climate zone while 6.2% moved to a cooler zone (Fig. 2). Among stated reasons for moving, study and work were strongly and positively associated with a move from rural to city locations. Moving for work reason was also significantly positively associated with moving to a warmer climate and moving to a rural area (Table 1). The surprisingly low correlation between 'moving for lifestyle' and selective moves to rural, or to warmer climate may be explained by the fact that 'getting a smaller/ bigger place', 'getting my own place', 'living closer to amenities' were categorised as lifestyle reasons. Only 10–15% of the lifestyle reasons were for 'seeking a change of lifestyle'.

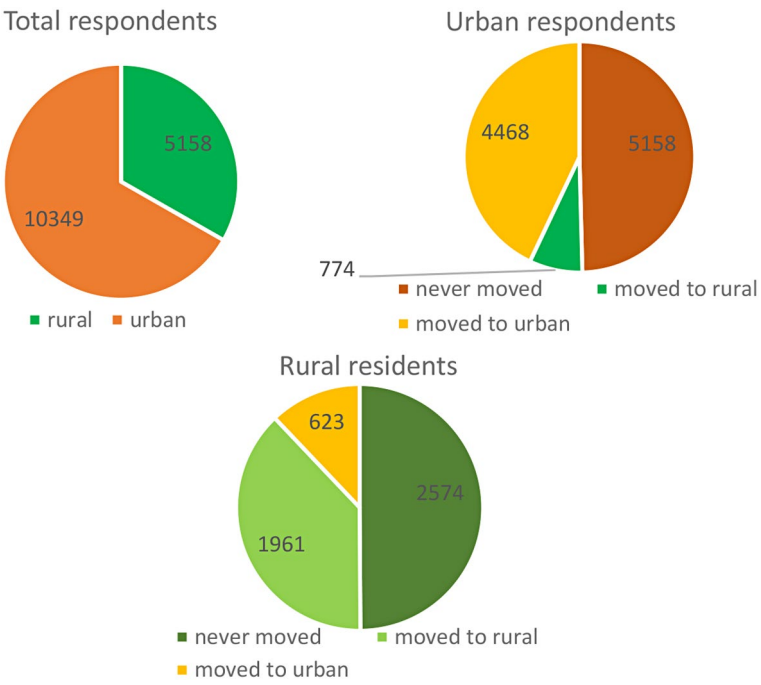

Fig. 1 Residential mobility: urban vs. rural

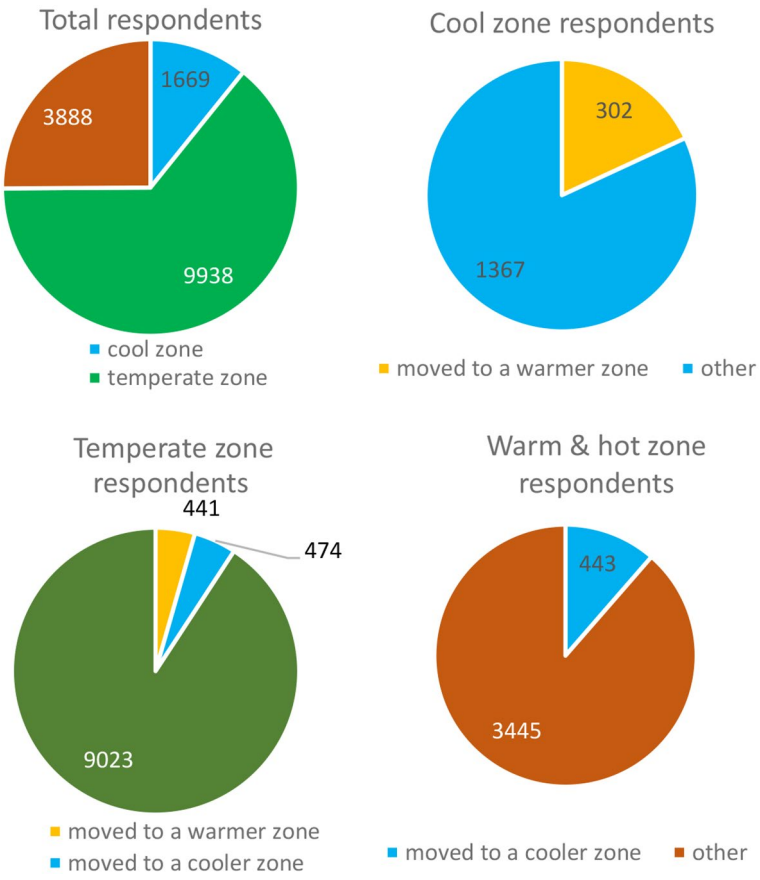

Fig. 2 Residential mobility: climate zones

Table 1 Reasons for moving: partial correlation for each type of move

Reasons for moving	move to city (rural residents)	move to rural (urban residents	move to warmer climate	move to cooler climate
Work	0.100**	0.084**	0.108**	-0.065**
Study	0.191**	-0.008	0.023**	-0.013
Lifestyle	-0.075**	-0.041**	-0.042**	0.057**
Family	0.050**	0.008	0.027**	-0.011
Health	0.017	0.012	0.033**	-0.005
Neighbourhood	-0.034**	-0.000	-0.015	0.014

** significant at $p<0.05$ level

4.1.2 Personality Traits and Life Satisfaction

Mean values for personality traits vary little over the three baseline years of measurement since theory posits that personality is a fixed individual characteristic (Costa & McCrae, 1998). Average extraversion and openness to experience decrease slightly between 2013

Table 2 Personality traits and LS mean score and standard deviation for baseline years

Baseline year	2013		2017		2021	
	mean	SD	mean	SD	mean	SD
extraversion (1–7)	4.431	1.091	4.412	1.095	4.361	1.089
agreeableness (1–7)	5.448	0.908	5.412	0.933	5.394	0.961
conscientiousness (1–7)	5.124	1.023	5.115	1.025	5.144	1.023
emotional stability (1–7)	5.191	1.087	5.215	1.077	5.277	1.107
openness to experience (1–7)	4.249	0.908	4.201	0.933	4.136	0.961
life satisfaction (0–10)	7.946	1.399	7.954	1.393	7.955	1.393

Table 3 Socio-demographic variables for baseline years

	2013		2017		2021	
	n	%	n	%	n	%
married/ de facto	8,103	61.32	7,566	62.50	7,671	63.37
have children	3,931	29.75	3,615	29.86	3,313	27.37
female	7,106	53.78	6,547	54.08	6,547	54.08
education:						
university	3,351	25.37	3,540	29.26	3,880	32.07
unemployed	454	3.44	338	2.79	298	2.46
favourable life event	2,895	21.96	2,787	23.05	2,164	17.9
adverse life event	5,626	42.59	4,832	39.97	4,780	39.54
	mean	SD.	mean	SD	mean	SD.
household income ($k)	113.70	103.3	130.60	156.10	144.70	166.10
age (years)	45.42	18.31	46.20	18.10	50.20	18.10

and 2021 while average emotional stability increases a little. Variations around the mean are similar between baseline years. Life satisfaction scores averaged at 7.95 (on a 1–10 scale; scores are stable across baseline years) (Table 2). Pairwise correlations suggest some overlap between LS and emotional stability ($R=0.155$) and LS and conscientiousness ($R=0.124$).

4.1.3 Socio-Demographic Variables

Demographic indicators (marital status, gender, children) are stable over the period of study (Table 3). Education levels change significantly between 2013 and 2021 with 32% holding a tertiary degree in 2021 compared to 25% in 2013. Unemployment decreases from 3.44 to 2.46% over the period of study, well below the national average but reflecting the national trend (5.6–5.1%) (World Bank, 2023). In nominal dollar terms, average household income for our sample rose from $113,000 to $144,000. The median household income for the whole Australian population rose from $107,000 to $139,000 during the same period (Australian Bureau of Statistics, 2022a). Thus, the change in household income in the sample over the study period reflects the national trend. The percentage of respondents affected by life events varies slightly over the period with about 20% reporting a favourable life event and about 40% reporting an adverse life event.

4.2 Selective Mobility

4.2.1 Selective Mobility Between Rural and Urban Area

Two sets of models were estimated: the first set predicts the probability for people residing in a rural area in the baseline year to move to an urban area; the second set estimates the probability for residents of urban areas to move to a rural area. Results for the basic model (only adjusted for age and sex) show that LS scores before the move for rural residents are not significantly associated with a selective move to an urban area. For urban residents, lower LS scores before the move are significantly associated with a move to a rural area. These results are largely confirmed in the fully adjusted models (reported in Table 4) although the LS coefficient in the 'move to the city' model becomes weakly significant.

Among personality traits, openness to experience is positively associated with a move from rural to the city, and agreeableness is negatively associated with a move from the city to rural. Age is a negative predictor of move confirming the prevalence of mobility among young residents. Being unemployed is a strong positive predictor of selective moves of any form, but families with children are less likely to move. A higher education level is a predictor of a move from rural to urban but not of a move from urban to rural. Favourable life events are positively associated with selective mobility, however adverse life events have apparently no influence.

We estimated the same models as above using a dataset comprising only people who had moved during the period rather than all residents (results not shown). We found that LS scores before the move are not a significant predictor of a choice between moving to the city

Table 4 Association between LS score before the move and selective mobility to urban or rural

	Fully adjusted model			Fully adjusted model		
Number of observations	$N=30{,}963$			$N=63{,}446$		
Number of respondents	$n=5{,}114$			$n=10{,}284$		
Cohort	Rural residents			Urban residents		
Dependent variable	**move to urban**			**move to rural**		
	OR	CI		OR	CI	
life satisfaction (n-1)	1.014	0.965	1.065	0.957*	0.914	1.003
extraversion	1.083	0.997	1.178	1.036	0.963	1.114
agreeableness	0.944	0.866	1.028	0.900**	0.834	0.971
conscientiousness	1.028	0.943	1.121	1.065	0.983	1.155
emotional stability	0.962	0.879	1.054	0.992	0.912	1.079
openness to experience	1.097**	1.002	1.202	1.061	0.977	1.152
age (square)	0.964**	0.981	0.971	0.981**	0.976	0.986
female	0.979	1.032	1.158	1.032	0.887	1.201
married	0.706**	0.993	0.838	0.993	0.838	1.176
children	0.563**	0.855	0.689	*0.855**	0.716	1.020
education status	1.149**	1.012	1.243	1.012	0.941	1.088
household income	0.996**	0.996	0.998	0.996**	0.995	0.998
unemployed	1.597**	1.796	2.227	1.796**	1.316	2.451
life events (fav)	2.323**	2.491	2.752	2.491**	2.137	2.904
life events (adverse)	0.943	1.027	1.115	1.027	0.884	1.191

Table shows **odd ratio** and confidence interval for each variable; ** indicates significance $p<0.05$, * indicates significance $p<0.10$

or moving to another rural area for rural residents. The model for urban residents showed a significant association between lower LS scores before the move and the choice to move to rural, however the coefficient becomes non-significant in the fully adjusted model.

4.2.2 Selective Mobility to a Different Climate Zone

We estimated two sets of models predicting selective mobility to a warmer climate and then to a cooler climate. Results for the basic model show that lower LS scores before the move are significantly associated with mobility to a warmer climate for people residing in a cool or temperate zone at baseline time. Lower LS scores before the move are also significantly associated with mobility to a cooler climate for people who resided in the warm or the hot zone at baseline time. Results for the fully adjusted models (reported in Table 5) are consistent with the basic model, however the coefficient for 'move to a warmer climate' becomes weakly significant.

Openness to experience is positively associated with both moving to a warmer climate and moving to a cooler climate in the unadjusted models, however the coefficient drops out of significance in the adjusted models. As for the set of models predicting urban/ rural moves, age is a significantly negative factor indicating that younger people are more likely to move a different climate zone. Other socio-demographic and life event variables behave similarly to rural/ urban models.

We estimated the same models as above but using a dataset comprising only people who had moved during the period rather than all individuals (results not shown). For both sets of models, LS scores prior the move are significantly associated with selective mobility to

Table 5 Association between LS score before the move and selective mobility to a different climate zone

	Fully adjusted model			Fully adjusted model		
Number of observations	$N=70{,}881$			$N=24{,}308$		
Number of respondents	$n=11{,}541$			$n=3{,}880$		
Cohort	Cool/ temp zone residents			Warm/hot zone residents		
Dependent variable	**move to a warmer climate**			**move to a cooler climate**		
	OR	CI		OR	CI	
life satisfaction (n-1)	0.962*	0.919	1.007	0.930**	0.881	0.982
extraversion	1.040	0.966	1.120	1.071	0.964	1.188
agreeableness	0.938	0.864	1.018	1.026	0.922	1.142
conscientiousness	1.016	0.939	1.099	1.041	0.939	1.155
emotional stability	1.018	0.936	1.107	1.002	0.893	1.126
openness to experience	1.072	0.986	1.166	1.032	0.925	1.151
age (square)	0.968**	0.963	0.974	0.969**	0.961	0.977
female	1.019	0.882	1.177	1.121	0.908	1.384
married	0.900	0.776	1.044	0.954	0.776	1.173
children	0.789**	0.671	0.927	0.783**	0.629	0.976
education status	1.063*	0.995	1.136	1.168**	1.054	1.295
household income	0.995**	0.994	0.996	0.997**	0.996	0.999
unemployed	1.696**	1.288	2.232	1.636**	1.107	2.419
life events (fav)	2.158**	1.876	2.482	2.352**	1.925	2.874
life events (adverse)	1.008	0.879	1.155	0.944	0.779	1.144

Table shows **odd ratio** and CI for each variable: ** indicates significance $p<0.05$; * significance level $p<0.1$

a different climate zone: i.e., people dissatisfied with their lives were more likely to selectively move to a different climate zone.

4.3 Social and Ecological Influence

Models predicting LS trajectory in the years after baseline measurement were estimated for type of residence (rural/ urban) and climate zone (warmer/ cooler). All models used FE (within-individual) estimators. We used the dataset of 'movers' to estimate social influence on LS trajectory. The models record the influence of a change of residence: rural for respondents who were initially urban residents, urban for initial rural residents. They do not take into account the length of residence or the (limited) possibility of back-and-forth movements between the two types of residence.

4.3.1 Social and Ecological Influence of Type of Residence (rural/ Urban) on LS

When urban residents move to a rural area, living in a rural area has a positive effect on their LS trajectory. This positive association appears stronger when controlling for personality traits and socio-economic factors. However, it seems that for rural residents who move to an urban area, living in the city has no significant influence on their LS trajectory over the period (Table 6).

Extraversion, agreeableness, and emotional stability have a positive influence on the LS trajectory of urban residents who moved. Emotional stability is the only personality trait with a significant (positive) influence on the LS trajectory of rural residents who moved. Socio-demographic control variables have similar positive coefficients for the two sets of models.

Table 6 Predictors of LS within-individual trajectory for residents who moved: urban/ rural

	Fully adjusted model			Fully adjusted model		
Number of observations	$N=38,162$			$N=18,485$		
Number of respondents	$n=5,239$			$n=2,582$		
cohort	Urban residents who moved			Rural residents who moved		
Adjusted R^2*	Adj. $R^2=0.3579$			Adj. $R^2=0.3024$		
LS (dep var)	**Coeff.**	**CI**		**Coeff.**	**CI**	
urban residence	-	-	-	-0.019	-0.112	0.074
rural residence	0.076**	0.002	0.150	-	-	-
extraversion	0.049**	0.014	0.084	0.045	-0.010	0.100
agreeableness	0.047**	0.017	0.078	0.013	-0.033	0.059
conscientiousness	-0.009	-0.042	0.023	0.046	-0.005	0.097
emotional stability	0.088**	0.056	0.119	0.093**	0.045	0.141
openness to experience	0.010	-0.026	0.045	0.043	-0.011	0.097
married	0.178**	0.126	0.230	0.137**	0.050	0.225
health status	0.280**	0.256	0.303	0.271**	0.233	0.308
household income	0.001**	0.001	0.001	0.002**	0.002	0.002

Table shows **coefficient** and CI for each variable; ** indicates significance $p<0.05$; * significance $p<0.10$

* Reported adjusted R^2 was calculated in STATA using absorbing indicators: https://www.stata.com/support/faqs/statistics/areg-versus-xtreg-fe/

4.3.2 Ecological Influence of Climate Zone on LS

For models predicting the influence of moving to a warmer climate zone, we used respondents who lived in the temperate or cool zone at baseline time and moved during the period; likewise, we predicted the influence of moving to a cooler zone for the cohort of respondents who resided in warm or hot zone and moved during the period.

When people residing in a cool or temperate zone move to a warmer climate, living in warmer climate has a positive influence on their LS trajectory; this association is maintained when controlling for personality traits and socio-economic factors. However, for people residing in a warm or hot zone who move to a cooler climate, living in a cooler climate has apparently no significant influence on their LS trajectory (Table 7). Extraversion, agreeableness, and emotional stability have a positive effect on LS trajectory of people from temperate or cool regions who moved. Emotional stability was the only trait with a significant (positive) effect on people from warm regions who moved. The influence of socio-demographic factors on LS trajectory was similar for both cohorts.

5 Discussion

As, to our knowledge, no prior study examined the relationship between LS levels and selective geographic mobility within the same country, direct comparisons of results are difficult. Our findings suggest that lower LS scores before the move may predict two specific geographic migrations: a move from an urban to a rural area and a move to a region with a different climate. This outcome appears consistent with findings by Nowok et al. (2013) that for people who choose to move, there is generally a low point in happiness level prior to the move. However we need to be cautious when interpreting these findings: moving to

Table 7 Predictors of LS within-individual trajectory for residents who moved: climate zone

	Fully adjusted model			Fully adjusted model		
Number of observations	$N=41,479$			$N=15,168$		
Number of respondents	$n=5,698$			$n=2,123$		
Cohort	'movers' from a cool/ temperate zone			'movers' from a warm/hot zone		
Adjusted R^2*	Adj. $R^2=0.3486$			Adj. $R^2=0.3087$		
LS (dep var)	**Coeff.**	**CI**		**Coeff.**	**CI**	
Cool/ temp zone residence	-	-	-	0.012	-0.103	0.127
warm zone residence	0.142**	0.040	0.245	-	-	-
extraversion	0.059**	0.025	0.093	0.020	-0.040	0.080
agreeableness	0.045**	0.016	0.075	0.009	-0.042	0.059
conscientiousness	0.011	-0.020	0.042	0.007	-0.048	0.063
emotional stability	0.087**	0.056	0.117	0.094**	0.041	0.147
openness to experience	0.016	-0.019	0.051	0.033	-0.026	0.092
married	0.168**	0.115	0.220	0.160**	0.070	0.251
health status	0.269**	0.246	0.293	0.298**	0.258	0.338
household income	0.001**	0.001	0.001	0.001**	0.001	0.002

Table shows **coefficient** and CI for each variable; ** indicates significance $p<0.05$; * significance $p<0.10$

* Reported adjusted R^2 was calculated in STATA using absorbing indicators https://www.stata.com/support/faqs/statistics/areg-versus-xtreg-fe/

the country or to a region with a warmer climate may be a conscious lifestyle decision that people make when they are not happy with their life in the city, or when they wish to live in a sunnier, warmer place; but it may also be a decision imposed by circumstances (work, study) rather than a deliberate choice. The low percentage of respondents who selected 'seeking a change of lifestyle' as a reason for moving seems to confirm this assumption. A move from Sydney (temperate zone) to Brisbane (warm zone) may be motivated by nothing else than a job opportunity!

To test whether the pattern of relationship between LS scores and selective mobility is influenced by the move reason, we estimated the selective mobility models while including a dummy variable indicating a move for work reasons. The results (not shown) indicate no significant relationship between pre-move LS scores and a move to rural or a move to a warmer climate. Conversely, lower LS levels before the move are significantly associated with a move to the city or a move to cooler region. This outcome suggests that when people move from rural to urban or when they move to a cooler climate, it is more likely that the reason behind the move is job related.

Results from our social and ecological influence models suggest that moving from an urban to a rural area or moving to a region with a warmer climate is associated with an uplift in the individual's LS trajectory. Again, as this type of relationship has never been investigated before, direct comparison of results is difficult. However this outcome is consistent with previous findings from research in Australia, the US and Canada that report the positive influence of rural living on LS (Cummins et al. 2003; Fernandez & Kulik, 1981; Helliwell et al. 2019). It also confirms existing evidence showing that higher temperatures have a positive effect on LS for people who normally live in cooler areas (Maddison & Rehdanz, 2011). Finally, it aligns with earlier findings by Rappaport (2007) indicating that US residents move to places with 'nicer weather' to maximise their quality of life; and with evidence that people in Europe value sunny climate as an amenity (Maddison & Bigano, 2003; Moro et al. 2008).

The overall picture that comes out of our findings is that people who are unhappy with city life are more likely to choose to migrate to a rural area. Once they have moved there, their LS trajectory registers an upward lift, seemingly confirming the beneficial impact of the move. The same interpretation can apply to people who are unhappy with living in a cool area and decide to move to a warmer region. This pattern in subjective individual wellbeing path may not be limited to selective mobility as it reflects a pattern observed by Nowok et al. (2013) for all internal migrants in the UK: the move happens after a period of stress with low levels of happiness and is followed with an improvement in happiness levels, although the same study noted that the improvement may only be transitory. Our findings are also consistent with previous evidence that rural and warmer locations with higher levels of happiness wellbeing attract more migrants (Hummel, 2016).

The role of personality traits in predicting selective mobility appears to be small when these variables are included with LS scores and socio-demographic factors. The only two personality variables with significant coefficients were agreeableness, negatively associated with a move from urban to rural, and openness to experience positively associated with a move from rural to urban. Jokela (2020) who used a similar dataset but did not include LS as an explanatory factor had openness to experience along with conscientiousness and extraversion predicting a move to the city. The positive association between openness to experience and a move to the city may be attributed to the fact that people who are open

to experience are more likely to experiment new ideas and thus be willing to move to new places (Silvia & Christensen, 2020). Conversely, people with high levels of agreeableness are more likely to stay in the same place for a long time as they value the relationships they have developed (Jokela, 2009, 2014). Finally, it is worth mentioning that the overlap between LS and some personality traits (emotional stability and conscientiousness) noted in Sect. 4.1.2 means that some of our fully adjusted models may be over-adjusted.

The influence of socio-demographic factors on selective mobility decisions reflect their influence on internal migration decisions reported elsewhere (Hummel, 2016; Nowok et al. 2013). A noteworthy outcome from this research is the lack of significance of the 'female' factor in all models. According to the migration literature (Castorina & Welters, 2022), women are more likely to be 'tied movers' and as such, one could expect that they would be less likely to see an uplift of their LS trajectory after the move compared to men. However Nowok et al. (2013) report no differences between men and women in subjective wellbeing trajectory after migration even where women are tied movers.

6 Conclusion

The objective of this paper was to investigate the possible impact of selective mobility, and social and ecological influence on the geographic clustering of LS scores. From this general objective we derived several research questions. In our analysis, we control for individual socio-economic characteristics and personality traits as those variables have been shown to influence mobility decisions.

In terms of selective mobility, our results show that lower LS scores before the move are associated with a higher probability of a move to a rural area for urban residents; however, LS scores do not seem to influence a move to the city for rural residents (RQ_1). We also find evidence of an association between lower LS scores before the move and a decision to move to a region with a different climate (RQ_2). This is true regardless of whether the region of destination has a warmer or cooler climate.

In the second step of our study, we investigate the possible social and ecological influence that a specific type of residence may have on the LS of people who move. We find that a move from an urban to a rural area is associated with an uplift in LS trajectory over time for the individual (RQ_3). A move from a cool or temperate region to a warmer climate is associated with a similar uplift in LS trajectory (RQ_4). Conversely a move from a rural area to the city, or a move to a cooler region have seemingly no effect on LS.

We acknowledge several limitations that could hamper the interpretation and generalisation of our results. Firstly, our classification between rural and urban areas relies on a remoteness criterion, which is a crude way of defining 'rurality'. Mid-size regional cities such as Townsville or Cairns with a population over 150,000 display features such as density, social infrastructure that many would recognise as urban; however, they are classified as *rural* in our analysis. Secondly, our climate zone classification relies on temperature thresholds that may not accurately reflect all the characteristics of each climate zone: for instance, a warm area may be dry and sunny or alternatively rainy and humid. Finally, our analysis only partially address the various reasons why people choose to move. Jokela (2021) shows that the influence of different personality traits on the decision to move is dependent on the motivations behind the move. There is no reason to believe that the association between LS

and specific types of selective mobility isn't also conditioned by the motivations behind the move. Further research that differentiates between reasons for moving would provide further insight into this issue. Finally, our social and ecological influence analysis does not factor in the influence of time. The results in Nowok et al. (2013) highlight the relationship between the time after the move and LS and it is possible that the same pattern applies to urban/rural and climate selective mobility.

Despite these limitations, our study makes an important contribution to both the economics of wellbeing literature and the literature on internal migration. To the best of our knowledge, it is the first study that investigates the role of LS on selective geographic mobility within the same country, and that analyses the impact of a such move on LS trajectory. It is also the first time that the effect of a move to a different climate zone on LS is examined.

Our study shows that when people choose to migrate to regions that they perceive as attractive, they tend to do so after a period where they may feel stressed, with the expectation that the move will make them happier. Our results suggest that overall, the move may fulfil these expectations. Thus, LS scores of people who wish to move could be an indicator of where they will choose to move. This knowledge would be useful in helping demographers project future population movements from metropolitan areas to 'regional areas' and to warmer climes. Recent population statistics in Australia appear to support the evidence of a 'green change' and 'move to sunshine' (Australian Bureau of Statistics, 2023a). Our findings may also assist in the development of policies that aim to promote living in regional areas by identifying wellbeing and psychological factors that motivate people to selectively move to these areas. Conversely, a better knowledge about push factors in regions that people are leaving may help address these problems.

Acknowledgements The authors wish to thank the College of Business, Law and Governance, James Cook University, for their support to our research.

Funding The research leading to these results was funded by the College of Business, Law and Governance, James Cook University, under the College HDR competitive funding
Open Access funding enabled and organized by CAUL and its Member Institutions

Declarations

Ethical Approval This project did not involve the collection of primary data and ethical approval was required.

Informed Consents The use of the HILDA restricted release 21 (Waves 1–21) data base required special approval from the Australian Department of Social Services (Application #762,910 approved on 5/05/2023).

Conflict of Interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Australian Bureau of Statistics (2023b). 21/03/2023). Remoteness areas: Australian statistical geography standard (ASGS). Retrieved from https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/remoteness-structure/remoteness-areas.

Australian Bureau of Statistics (2016). *Australian Statistical Geography Standard: Volume 1-Main Structure and Greater capital city Statistical Areas, July 2016*. Retrieved from Canberra: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument.

Australian Bureau of Statistics (2022a). 13/12/2022). Australian national accounts: Distribution of household income, consumption and wealth. Retrieved from https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-distribution-household-income-consumption-and-wealth/latest-release.

Australian Bureau of Statistics (2022b). Population: Census. Retrieved from https://www.abs.gov.au/statistics/people/population/population-census/latest-release.

Australian Bureau of Statistics (2023a). 14/9/2023). National, state and territory population: Statistics about the population and components of change (births, deaths, migration) for Australia and its states and territories. March 2023. Retrieved from https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release.

Bartram, D. (2011). Economic migration and happiness: Comparing immigrants' and natives' happiness gains from income. *Social Indicators Research*, *107*, 57–76. https://doi.org/10.1007/s11205-010-9696-2.

Bond, R., Fariss, C., Jones, J., Kramer, A., Marlow, C., Settle, J., & Fowler, J. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, *489*(295), 296–298. https://doi.org/10.1038/nature11421.

Brereton, F., Clinch, J. P., & Ferreira, S. (2008). Happiness, geography and the environment. *Ecological Economics*, *65*, 386–396. https://doi.org/10.1016/j.ecolecon.2007.07.008.

Brereton, F., Bullock, C., Clinch, J. P., & Scott, M. (2011). Rural change and individual well-being: The case of Ireland and rural quality of life. *European Urban and Regional Studies*, *18*(2), 203–227. https://doi.org/10.1177/0969776411399346.

Bureau of Meteorology (Cartographer) (2006). Climate classification maps: Temperature/humidity zones. Retrieved from http://www.bom.gov.au/climate/maps/averages/climate-classification/?maptype=tmp_zones.

Butikofer, A., & Peri, G. (2017). *The Effects of Cognitive and Noncognitive Skills on Migration Decisions*. (ISSN: 0804–6824).

Campbell, P. (2019). Dispositional traits and internal migration: Personality as a predictor of migration in Australia. *Journal of Research in Personality*, *78*, 262–267. https://doi.org/10.1016/j.jrp.2018.12.009.

Castorina, D., & Welters, R. (2022). Interregional migration: Who decides to move? *Bulletin ofApplied Economics*, *9*(1), 97–114. https://doi.org/10.47260/bae/917.

Chen, L., & Ng, E. (2012). Otdoor thermal comfort and outdoor activities: A review of the research in the past decade. *Cities*, *29*, 118–125. https://doi.org/10.1016/j.cities.2011.08.006.

Cohen, D. (1996). Law, social policy and violence: The impact of regional cultures. *Journal of Personality and Social Psychology*, *70*(5), 961–978.

Costa, P., & McCrae, R. (1992). Normal personality assessment in clinical practice: The NEO personality inventory. *Psychological Assessment*, *4*(1), 5–13.

Costa, P., & McCrae, R. (1998). Trait theories of personality. In D. F. Barone, M. Hersen, & Van V. B. Hasselt (Eds.), *Advanced personality. The Plenum Series in Social/Clinical psychology*. Springer.

Cummins, R. (2018). Subjective wellbeing as social indicator. *Social Indicators Research*, *135*, 879–891. https://doi.org/10.1007/s11205-016-1496-x.

Cummins, R., Eckersley, R., Pallant, J., Van Vugt, J., & Misajon, R. (2003). Developing a national index of subjective wellbeing: The Australian unity wellbeing. *Social Indicators Research*, *64*, 159–190.

Deci, E., & Ryan, R. (2008). Hedonia, eudaimonia, and wellbeing: An introduction. *Journal of Happiness Studies*, *9*, 1–11. https://doi.org/10.1007/s10902-006-9018-1.

Diener, C., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, *2*, 253–260. https://doi.org/10.1038/s41562-018-0307-6.

Fernandez, R., & Kulik, J. (1981). A multilevel model of life satisfaction: Effects of individual characteristics and neighborhood composition. *American Sociological Review, 46*(6), 840–850. Retrieved from https://www.jstor.org/stable/2095082.

Florida, R. (2009). *Who's your City? How the Creative Economy is Making Where to Live the Most Important Decision of your Life*. Basic Books.

Florida, R., & Mellander, C. (2010). There goes the metro: How and why bohemians, artists and gays affect regional housing values. *Journal of Economic Geography*, *10*(2), 167–188. https://doi.org/10.1093/jeg/lbp022.

Gilbert, A., Colley, K., & Roberts, D. (2016). Are rural residents happier? A quantitative analysis of subjective wellbeing in Scotland. *Journal of Rural Studies*, *44*, 37–45. https://doi.org/10.1016/j.jrurstud.2016.01.002.

Graham, C., & Nikolova, M. (2015). Bentham or Aristotle in the development process? An empirical investigation of capabilities and subjective well-being. *World Development*, *68*, 168–179. https://doi.org/10.1016/j.worlddev.2014.11.018.

Helliwell, J. (2003). How's life? Combining individual and national variables to explain subjective wellbeing. *Economic Modelling*, *20*, 331–360.

Helliwell, J., Shiplett, H., & Barrington-Leigh, C. (2019). How happy are your neighbours? Variation in life satisfaction among 1200 Canadian neighbourhoods and communities. *Plos One*, *14*(e210091). https://doi.org/10.1371/journal.pone.0210091.

Hendriks, M., & Bartram, D. (2018). Bringing happiness into the study of Migration and its consequences: What, why and how? *Journal of Immigrant & Refugee Studies*, *17*(3), 279–298. https://doi.org/10.1080/15562948.2018.1458169.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and Organizations Across Nations* (2nd ed.). Sage.

Hofstede, G., & McCrae, R. (2004). Personality and culture revisited: Linking traits and dimensions of culture. *Cross-Cultural Research*, *38*(1). https://doi.org/10.1177/10693971032594.

Hummel, D. (2016). Inter-state internal migration: State level wellbeing as a cause. *Journal of Happiness Studies*, *17*, 2149–2165. https://doi.org/10.1007/s10902-015-9689-6.

Inglehardt, R., & Klingemann, H. D. (2000). Genes, culture, democracy and happiness. In E. Diener, & E. Suh (Eds.), *Subjective wellbeing across cultures*. MIT Press.

Jokela, M. (2009). Persomality predicts migration between and within US states. *Journal of Research in Personality*, *43*, 79–83. https://doi.org/10.1016/j.jrp.2008.09.005.

Jokela, M. (2014). Personality and the realization of migration desires. In P. Rentfow (Ed.), *Geographical psychology: Exploring the interaction of environment and behavior* (pp. 81–97). American Psychological Asociation.

Jokela, M. (2020). Selective residential mobility and social influence in the emergence of neighborhood personality differences: Longitudinal data from Australia. *Journal of Research in Personality*, *86*(103953). https://doi.org/10.1016/j.jrp.2020.103953.

Jokela, M. (2021). Personality traits and reasons for residential mobility: Longitudinal data from United Kingdom, Germany, and Australia. *Personality and Individual Differences*, *180*(110978). https://doi.org/10.1016/j.paid.2021.110978.

Jokela, M., Elovainio, M., Kivimaki, M., & Keltikangas-Jarvinen, L. (2008). Temperament and migration patterns in Finland. *Psychological Science*, *19*(9), 831–837. https://doi.org/10.1111/j.1467-9280.2008.02164.x.

Jokela, M., Bleidorn, W., Lamb, M., Gosling, S., & Rentfrow, P. (2015). Geographically varying associations between personality and life satisfaction in the London metropolitan area. *PNAS, 112*(3), 725–730. Retrieved from www.https://doi.org/10.1073/pnas.1415800112.

Kristoffersen, I. (2010). The metrics of subjective wellbeing: Cardinality, neutrality and additivity. *The Economic Record*, *86*(272), 98–123. https://doi.org/10.1111/j.1475-4932.2009.00598.x.

Kubiszewski, I., Jarvis, D., & Zakariyya, N. (2019). Spatial variations in contributors to life satisfaction: An Australian case study. *Ecological Economics*, *164*, 1–10. https://doi.org/10.1016/j.ecolecon.2019.05.025.

Lee, E. S. (1966). A theory of migration. *3*(1), 47–57. Retrieved from http://www.jstor.org/stable/2060063.

Lignier, P., Jarvis, D., Grainger, D., & Chaiechi, T. (2023). Does the climate impact satisfaction with life? An Australian spatial study. *Weather Climate and Society*, *15*(1), 159–175. https://doi.org/10.1175/WCAS-D-22-0063.1.

Lynn, M. (2006). P. Steel (Ed.), National differences in Subjective well-being: The interactive effects of extraversion and neuroticism. *Journal of Happiness Studies* 7 155–165 https://doi.org/10.1007/s10902-005-1917-z.

Maddison, D., & Bigano, A. (2003). The amenity value of the Italian climate. *Journal of Environmental Economics and Management*, *45*, 319–332. https://doi.org/10.1016/S0095-0696(02)00052-9.

Maddison, D., & Rehdanz, K. (2011). The impact of climate on life satisfaction. *Ecological Economics*, *70*, 2437–2445. https://doi.org/10.1016/j.ecolecon.2011.07.027.

Massey, D., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. (1993). Theories of international migration: A review and Appraisal. *Population Development Review*, *19*, 3. https://doi.org/10.2307/2938462.

Melbourne Institute (2022). *Hilda Statistical Report*. Retrieved from Melbourne: https://melbourneinstitute.unimelb.edu.au/hilda/publications/hilda-statistical-reports.

Mincer, J. (1978). Family migration decisions. *The Journal of Political Economy*, *86*(5), 749–773.
Moro, M., Brereton, F., Ferreira, S., & Clinch, J. P. (2008). Ranking quality of life using subjective well-being data. *Ecological Economics*, *65*, 448–460. https://doi.org/10.1016/j.ecolecon.2008.01.003.
Nowok, B., van Ham, M., Findlay, A., & Gayle, V. (2013). Does migration make you happy? A longitudinal study of internal migration and subjective well-being. *Environment and Planning a*, *45*, 986–1002. https://doi.org/10.1068/a45287.
OECD (2013). *OECD Guidelines on Measuring Subjective Wellbeing*. Retrieved from https://doi.org/10.1787/9789264191655-en.
Oishi, S., & Schimmack, U. (2010). Residential mobility, well-Being, and mortality. *Journal of Personality and Social Psychology*, *98*(6), 980–994. https://doi.org/10.1037/a0019389.
Oishi, S., & Tsang, S. (2022). The socio-ecological psychology of residential mobility. *Journal of Consumer Psychology*, *32*, 519–536. https://doi.org/10.1002/jcpy.1308.
Oishi, S., Saeki, M., & Axt, J. (2015). Are people living in walkable areas healthier and more satisfied with life? *Applied Psychology: Health & Well-being*, *7*(3), 365–383. https://doi.org/10.1111/aphw.12058.
Oswald, A., & Wu, S. (2011). Well-being across America. *The Review of Economics and Statistics*, *93*(4), 1118–1134.
Polgreen, L., & Simpson, N. (2011). Happiness and international migration. *Journal of Happiness Studies*, *12*, 819–840. https://doi.org/10.1007/s10902-010-9229-3.
Rappaport, J. (2007). Moving to nice climate. *Regional Science and Urban Economics*, *37*, 375–398. https://doi.org/10.1016/j.regsciurbeco.2006.11.004.
Rentfrow, P., & Jokela, M. (2016). Geographical psychology: The spatial organization of psychological phenomena. *Current Directions in Psychological Science*, *25*(6), 393–398. https://doi.org/10.1177/0963721416658446.
Rentfrow, P., Mellander, C., & Florida, R. (2009). Happy states of America: A state-level analysis of psychological, economic, and social well-being. *Journal of Research in Personality*, *43*(6), 1073–1082. https://doi.org/10.1016/j.jrp.2009.08.005.
Rentfrow, P., Gosling, S., Jokela, M., Stillwell, D., Kosinski, D., & Potter, J. (2013). Divided we stand: Three psychological regions of the United States and their political, economic, social, and health correlates. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/a0034434.
Rentfrow, P., Jokela, M., & Lamb, M. (2015). Regional personality differences in great Britain. *Plos One*, *10*(3), e0122245. https://doi.org/10.1371/journal.pone.0122245.
Saucier, G. (1994). Mini_Markers: A brief version of Goldberg's unipolar big-five markers. *Journal of Personality Assessment*, *53*(3), 506–516.
Schaller, M., & Murray, D. (2008). Pathogens, personality, and culture: Disease prevalence predicts worldwide variability in sociosexuality, extraversion, and openness to experience. *Journal of Personality and Social Psychology*, *95*(1), 212–221. https://doi.org/10.1037/0022-3514.95.1.212.
Schkade, D., & Kahneman, D. (1998). Does living in California make people happy? A focussing illusiion in judgments of life satisfaction. *Psychchological Science, 9*(5), 340–346. Retrieved from https://www.jstor.org/stable/40063318.
Shucksmith, M., Cameron, S., Merridew, T., & Pichler, F. (2009). Urban–rural differences in quality of life across the European union. *Regional Studies*, *43*, 1275–1289. https://doi.org/10.1080/00343400802378750.
Silventoinen, K., Hammar, N., Hedlund, E., Koskenvuo, M., Ronnemaa, T., & Kaprio, J. (2007). Selective international migration by social position, health behaviour and personality. *European Journal of Public Health*, *18*(2), 150–155. https://doi.org/10.1093/eurpub/ckm052.
Silvia, P., & Christensen, A. (2020). Looking up at the curious personality: Individual differences in curiosity and openness to experience. *Current Opinion in Behavioral Sciences*, *35*, 1–6. https://doi.org/10.1016/j.cobeha.2020.05.013.
Sjaastad, L. (1962). The costs and returns of human migration. *Journal of Political Economy, 70*(5), 80–93. Retrieved from https://www.jstor.org/stable/1829105.
Tellegen, A., Lykken, D., Bouchard, T., Wilcox, K., Segal, N., & Rich, S. (1988). Personality similarity in twins reared apart and together. *Journal of Personality and Social Psychology*, *54*, 1031–1039.
Tiebout, C. (1956). A pure economy of local expenditures. *Journal of Political Economy*, *64*(5), 416–424.
Van de Vliert, E. (2013). Climato-economic habitats support patterns of human needs, stresses,and freedoms. *Behavioral and Brain Sciences*, *36*, 465–521. https://doi.org/10.1017/S0140525X12002828.
Weckroth, M., Ala-Mantila, S., Ballas, D., Ziogas, T., & Ikonen, J. (2022). Urbanity, neighbourhood characteristics and perceived quality of life (QoL): Analysis of individual and contextual determinants for Perceived QoL in 3300 Postal Code areas in Finland. *Social Indicators Research*, *164*, 139–164. https://doi.org/10.1007/s11205-021-02835-z.
White, M., Alcock, I., Wheeler, B., & Depledge, M. (2013). Would you be happier living in a Greener urban area? A fixed-effects analysis of panel data. *Psychological Science*, *24*(6), 920–928. https://doi.org/10.1177/0956797612464659.

World Bank. (2023). *Australia unemployment rate 1991–2023*. In: MacroTrends.
Ziogas, T., Ballas, D., Koster, S., & Edzes, A. (2023). Happiness, space and place: Community area clustering and spillovers of life satisfaction in Canada. *Applied Research in Quality of Life*. https://doi.org/10.1007/s11482-023-10203-x.